

REMARKS

Claims 1-9 are all the claims pending in the application.

Claim Rejections - 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-9 under § 103(a) as being unpatentable over Oda (US 6,448,557) in view of Cole et al. (US 6,046,485; “Cole”). Applicants respectfully traverse these rejections as follows.

Claims 1-5

Applicants respectfully submit that the applied combination fails to teach or suggest, at least: (1) the beam being greater in thickness than the infrared detecting portion in a direction perpendicular to the surface of the substrate, as recited in claim 1; and (2) the conductive material being surrounded by a dielectric protective film greater in thickness than the dielectric protective film of the infrared detecting portion in a direction perpendicular to the surface of the substrate, as recited in claims 4 and 5.

The Examiner alleges that Oda discloses a thermal infrared detector similar to the thermal infrared detector, but concedes that Oda does not disclose the beam being greater in thickness than the infrared detection portion in a direction perpendicular to the surface of the substrate. To compensate for this deficiency, the Examiner applies Cole alleging that it teaches an infrared detector having beams 46 and 48 with protective layer larger than the detection portion or responsive area 60. (Fig. 4).

In contrast, Applicants respectfully submit that Cole does not compensate for the deficiencies of Oda because Cole discloses a detection portion that is the same thickness as the beams 46 and 48. Applicant concedes that at least a portion of responsive area 60 in FIG. 4 of

Cole has a smaller thickness than the beams 46 and 48; however, this responsive portion 60 merely absorbs or emits heat. (col. 5, lines 22-27) On the other hand, the detection occurs via resistive paths 56 and 58, which change resistance as they are heated by responsive portion 60. Furthermore, “immediately above these resistive paths are significant protective layers 64.” (col. 5, lines 31-33) Applicants note that these protective layers 64 are the same thickness as the resistive legs (beams) 46 and 48.

Therefore, Cole clearly discloses that the beams (i.e. 46 and 48) are the same thickness as the resistive paths 56, 58, and teaches that significant protective layers 64 lie immediately above the resistive paths.

Thus, Applicants respectfully submit that independent claims 1, 4 and 5 are allowable over the applied combination. Furthermore, claims 2 and 3 are allowable, at least because of their dependency.

Method Claims 6-9

The Examiner alleges that Oda discloses most of the features recited in claims 6 and 9, but concedes that Oda fails to disclose etching the fourth dielectric film on the infrared detecting portion, so that the thickness of the fourth dielectric protective film is reduced to form the fifth dielectric protective film. To compensate for this deficiency, the Examiner applies Cole alleging that it teaches an infrared detector having the infrared detecting portion etched to reduce the cross sectional mass so that the thickness of protective film is reduced to form a reduced dielectric protective film.

Applicants respectfully submit that Cole does not teach or suggest etching the fourth dielectric protective film on the infrared detecting portion so that the thickness of the fourth dielectric protective film is reduced, to thereby form a fifth dielectric protective film.

To the contrary, as discussed above, Cole discloses that the beams (i.e. 46 and 48) are the same thickness as the protective layer 64 surrounding the resistive paths 56, 58. Thus, Cole does not show any etching of the protective layer 64 above the resistive paths 56, 58 and, further, teaches that the protective layers 64 above the resistive paths 56, 58 are significant.

Thus, Applicants respectfully submit that independent claims 6 and 9 are allowable for at least this reason. Furthermore, claims 7 and 8 are allowable, at least because of their dependency.

Additionally, regarding claim 6, Applicants respectfully submit that the combination of Cole and Oda applied by the Examiner fails to teach or suggest, at least, forming an etch stopper layer metal film on the fifth protective film of the infrared detecting portion, as recited in claim 6.

Even if Oda is modified as suggested by Cole to etch the fourth dielectric protective film on the infrared detecting portion so that the thickness of the fourth dielectric protective film is reduced, no portion of Oda or Cole teaches or suggests forming such a etch stopper layer film. Moreover, the etch stopper layer is for further processing of the shield members which are not even contemplated by Cole.

Thus, because this feature is not mentioned or even contemplated by Oda or Cole, Applicant respectfully submits that independent claim 6 is allowable over the cited combination. Furthermore, claims 7 and 8 are allowable, at least because of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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